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ABSTRACT

Introductory educational research courses are often based on the scientific model of research derived from natural science. Scientific research using theoretical constructs and measurement of variables establishes a body of verified knowledge through replication of experiments. The conceptualization of the introductory research course presented in this study is one based on a decision-making model of research derived from social science. This approach has been field-tested six times on 267 students in various M.Ed. programs. The two major objectives are for students to become aware of the field of educational research and to develop basic skills in research for educational decision-making. Five major findings emerged from this case study: (1) students learn basic research concepts through conducting a study for educational decision-making; (2) students learn the total research process; (3) decision-making research must be formally taught and contrasted to scientific research; (4) educational leaders should become familiar with the field of educational research before taking courses in specific methodologies, research designs, or statistics; and (5) introductory educational research textbooks and materials should include both decision-making and scientific models of research so that educational leaders gain further insights into research processes and multiple uses of research. (Author/CD)

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RESEARCH METHODS FOR EDUCATIONAL DECISION-MAKING: AN ALTERNATIVE APPROACH TO TEACHING INTRODUCTION TO EDUCATIONAL RESEARCH

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RESEARCH METHODS FOR EDUCATIONAL DECISION-MAKING: AN ALTERNATIVE APPROACH TO TEACHING INTRODUCTION TO EDUCATIONAL RESEARCH

Sally Schumacher

The case study summarized in this paper began with a puzzling observation: Why were Master degree students suddenly finding research exciting and stimulating? Why was there an increasing number of students enrolling in a recently developed Educational Research Methodology course instead of traditional Review of Research courses?[1] What were practitioners learning and experiencing within the new course that met both programatic and professional needs? With these questions in mind, the Investigator-Instructor carefully conducted a case study of six field testings of the introductory research course.

Introductory educational research courses are often based on the scientific model of research derived from natural science and physical science. Scientific research using theoretical constructs and measurement of variables establishes a body of verified knowledge through replication of experiments.[2] The conceptualization of the introductory research course[3] presented in this paper is one based on a decision-making model of research derived from social science.[4]

The rationale for conceptualizing the introductory research course as decision-making research is based on four considerations. First, the common characteristic of all research is systematic collection of information, careful analysis of data, and interpretation of the findings.[5] Although research designs and methods vary with the specific research purpose, all research involves systematic collection and analysis of data. Second, educators make decisions based on personal experience, philosophy of education (values, beliefs, attitudes), and "common sense"

or logic. An additional approach to educational decision-making is an empirical or research approach. Third, because of the social forces within the American society, such as increasing interdependence, complexity, and rapidity of change, a research approach to educational decision-making is not only necessary but often mandated by state departments of education as evaluation, needs assessment, and program or policy analysis studies.[6] Fourth, educators must become critical consumers of research within their field of speciality.

This approach has been field-tested six times on 267 students in M.Ed. programs of administration, supervision, counseling, elementary education, adult education, secondary education, and special education at Virginia Commonwealth University. Multiple evaluation procedures were used each semester: University Faculty Evaluation Instrument, Instructor-designed Course Evaluation, individual conferences with each student, group interview, analysis of all pupil products, and informal observation and follow-up of students.[7]

To understand the findings presented in this paper, the context in which this alternative conceptualization was developed and an overview of the course is presented. Ninety-five percent of the students in the School of Education are full-time staff members of metropolitan public schools who earn an M.Ed. by taking one or two courses per semester. Students represent a range of districts: urban, suburban, and rural; high and low population density; highly structured administrative organizations and informal administrative procedures; and districts which vary from 76% black enrollment to less than 5% black enrollment. Eighty-five percent of the students have not studied statistics because it is not required for the M.Ed. nor state certification. The M.Ed.

degree is the terminal degree for most students. Because students may take the research course any time during their program, students enter the course with different degrees of analytical and conceptual skills. Most students' previous experience in research has been library research, e.g. review of writings. The M.Ed. program at Virginia Commonwealth University requires three foundation areas: child or adolescent psychology, philosophy of education, and a research methods or review of research.

Students learn research design by analyzing three models of research: scientific, decision-making, and advocacy. The scientific model is exemplified by experimental design and ex post facto design. It is most often found as published research. The advocacy model is a case study design and is used in court cases, collective bargaining, formal responses to executive orders by other agencies, and program and budget justification studies.

The decision-making model is a case study design which focuses on areas where information is needed for program planning. The model emphasizes working within the norms of the institution. Significance of the study is determined not by statistical significance but by educational significance, e.g. the impact of the study on the institution.

The course emphasizes the uses and limitations of different methodologies. For example, students analyze different studies using official and unofficial documents, structured and unstructured observation (ethnography), questionnaires, open and closed response interviews, and standardized instruments. Although statistics is not taught, the interpretation, use and limitations of both qualitative and quantitative analysis is emphasized. Sampling and formal and informal procedures to establish validity and reliability are presented.

Student activities emphasize skills, knowledge and understandings necessary for decision-making research. Students learn a research process by completin small study which has implications for a school and/or district, critique a published research study, and develop research designs for decision-making. Students became aware of the difference between the roles of the researcher and the decision-maker, the distinction between making specific recommendations and drawing general educational implications, and the necessity of delineating short-term and long-term implications for decision-making. The difficulties of conducting research in an educational institution and problems in establishing validity and reliability is emphasized. In addition, students learn different procedures to facilitate the use of the research report for educational planning..

FINDINGS

The findings are based on four field testings after the research course was reconceptualized to meet student and program needs.[8] The two major objectives are for students to become aware of the field of educational research and to develop basic skills in research for educational decision-making. The findings are presented for these two objectives.

A. Introduction to the Field of Educational Research

The introduction to the field of educational research concentrates on four topics: 1) the nature of the educational institution, 2) the scientific model of research, 3) education as an area of study and 4) the growth of educational research as a speciality. Thus, students

are knowledgeable about the status of education as a science and develop skills to critically read published research.

The nature of the educational institution effects research, particularly when one contrasts it to a science laboratory. For example, a district is publically governed and represents the collective values of a particular community. Thus, most districts discourage studies which may be subpoenaed in court cases, e.g. sex or minority discrimination studies. The heart of the institution is the educational program and district guidelines specifically prohibit experimentation with students or programs for research purposes. The institution serves pupils in their developmental stages and both state and federal laws protect the confidentiality of pupil records and right to privacy. Finally a school system is a fluxional institution influenced by a changing society in which a researcher has little scientific control. Thus, the investigator must find ways to conduct a study within the norms of a particular community and the legal guidelines while the institution itself is constantly changing.

Despite these constraints, experimental design continues to be the scientific model of research. The purpose of science is to establish a body of verified knowledge through replication of experiments. Donald T. Campbell and Julian C. Stanley have delineated most carefully the application of experimental designs to education.[9] Glenn Bracht and Gene Glass have identified the difficulties in establishing internal and external validity in a single experimental or quasi-experimental design.[10] The more control the experimenter exerts in conducting the study, the more artificial the situation becomes which limits the external validity, e.g. generalizability of the results. Thus, most studies using experi-

mental or ex post facto design call for further research to verify another hypothesis.

By analyzing an example of an experimental study[11], students recognize the difference in the primary purpose and research process of scientific research and decision-making research. The scientific model of research begins with a review of the literature, not a decision to be made in a particular setting. The findings of scientific research add to the general body of knowledge and do not directly aid in program development in a particular school or district.

Although research for science emphasizes measurement, a variety of concepts and methodologies have been used in the field of education. Education is not a discipline per se but an area of study. Students are introduced to studies which use qualitative and quantitative data analysis. In addition, concepts from anthropology, political science, sociology, psychology, and economics have been utilized. The implications for the researcher is stressed: the need to justify the methodology he chose and the necessity of defining key terms as used in a particular study.

Students are introduced to educational research as a speciality with its own reference tools, professional associations, and opportunities for work. Reference materials include encyclopedias, almanacs, yearbooks, directories, dictionaries, handbooks, abstracts, and indexes to journals which specialize in educational research. In addition, federal legislation has had an impact on educational research. Beginning in 1954, a series of federal laws provided funds for research projects. New agencies and services were established. The 1965 ESEA Act established 10 research and development centers and 20 regional laboratories. In 1966 Educational Resources Information Centers were established. Much of the federal

support for educational research is now directed and coordinated through the National Institute of Education, established in 1972. National and state research associations have grown. Many large school districts have departments of educational research and planning with full-time staff and support services.

B. Research for Educational Decision-making

The second objective of the course is for students to develop basic research skills for educational decision-making. All students complete an empirical study in their own school setting. Several major themes, e.g. findings, emerged from the course field testings. These themes are only briefly cited or not emphasized in textbooks for introductory research courses. These themes are:

1. Being imaginative and resourceful: asking the researchable and feasible question
2. Fun in research: the unexpected in an unchartered course
3. This is research?? - establishing standards of adequacy
4. The significance of "findings" and the search for "meaning"
5. The next study: the importance of the research process

Each theme is briefly discussed below.

1. Being imaginative and resourceful -

Asking a researchable and feasible question may be a creative process. Students are first asked to think of something which pleases, upsets or concerns them in education. After a round table discussion, the Instructor then asks "what happened to your scientific objectivity?" In research for decision-making, being a concerned educator encourages careful research procedures. The scientific model assumes that being concerned leads to a systematic bias and requires appropriate research procedures to minimize this.

When students are asked to identify a research topic, they react in one of two ways: 1) asking such a broad question that it is not a feasible study within the constraints of time, their job, or their expertise, or 2) puzzlement because they are not accustomed to asking questions.

Both reactions present instructional problems. Those not use to asking questions are encouraged to brainstorm - to "I wonder if...", "I bet that...", "I suspect that...". Some of the most unusual studies begin with exploring ideas, examining assumptions, and developing hunches about previous observations. Some students develop a research question by thinking of a decision which must be made, a study already in progress, a new program being implemented, collected data which has not been analyzed, or available information which has not been systematically collected.

The process of asking researchable and feasible questions can be intellectually challenging: probing for sources of information, clarifying educational concepts and jargon, judiciously using intuition, visualizing the research process, etc. Broad topics must be narrowed to a specific research question which can be answered in a particular setting. The research question evolves as a student conducts the study. The study becomes a balance among the student's interests, the need for the study by his immediate supervisor, the district research policies, and the unexpected.

2. Fun in research: the unexpected in an unchartered course -

Part of the fun in research is discovering the unexpected and capitalizing on the unexpected to facilitate the study. An analogy is

that of being a detective - following leads, one after another, until the pieces begin to fall into place and the total pattern emerges.

Many students ask questions which for the first time require them to analyze their school/district from a research viewpoint - who has the information and how to obtain it. Students look for existing sources of information from different perspectives - e.g. regular teaching staff, special teachers, administrators, pupils, and parents. Students must know exact numbers such as the size of the student body; the organizational patterns of a school, district, or program; and the power, influence and authority of the decision-maker. The results of collecting information to decide the research design can be startling and can substantially change the proposed study.

Some students discover the unexpected in the process of data collection. For example, one study was of a "problem student" who had recently left a juvenile detention agency and returned to public school. In the middle of the two month observation period, the investigator was assigned additional departmental responsibilities which decreased her observation time. She thus had to rely more on teacher interviews. In addition, the "problem student" was suspended for ten days. This became a research opportunity when the foster parents came to school to re-instate the student. Another study investigated differences in the grades and standardized test scores of pupils from three different feeder schools. One startling discovery was that the feeder schools, all within the same district, did not use the same grading scale.

Most students develop ingenious methods to circumvent an unexpected difficulty. For example, one student found part of her population, e.g. staff members of an innovative program, were leaving town for the summer.

She quickly switched from a questionnaire to a telephone interview. When a teacher on leave of absence was not allowed access to confidential records because of district policy, a staff member dictated the data from the permanent records without identifying the individual pupils. Students learn to be flexible and use imaginative approaches to obtain information. Students discover the importance of consistent follow-through.

In the process of conducting the study, the research topic becomes more focused and narrowed. Thus a study to evaluate a reading program became a survey of teacher utilization of the official textbook. An investigation of the relationship of absenteeism and grades became a study of the relationship of failure and high-absentee seniors. A cost-benefit analysis of hand-scheduling vs computer scheduling became an analysis of costs in staff time.

3. This is research?? - establishing standards of adequacy -

Despite the unexpected developments in conducting the study, each student must demonstrate how he met specific research criteria or standards of adequacy for his study. Instruments such as questionnaires, opinionnaires, and interview schedules must be valid and reliable. This is usually done through using a panel of experts and field testing. The panel of experts includes those knowledgeable about the substantive topic and the decision-maker who authorized the study. The instrument is field tested on a population similar to the subjects of the study. All instruments are revised several times for selection of items, clarity of wording, and selection of the response set.[12]

Qualitative studies must meet criteria of authenticity and credibility.[13] The investigator uses original or official documents, observes

ongoing processes at the actual site, and systematically talks with informed participants. The investigator obtains as many different viewpoints as relevant to the study and synthesizes these to answer his research question.

The experience of the investigator also aids to establishing standards of adequacy. Most students are able to complete a study within a semester because, compared to an outside Investigator, they are knowledgeable about their programs, pupils, staffs, and communities. Thus, they have the preliminary information to conduct a study. This is also cited in the final report.

Other procedures to meet research standards of adequacy include making explicit methodological assumptions, citing limitations of the study, defining important terms, and stating the viewpoint from which the study was conducted. The viewpoint makes explicit the rationale for the study and the potential uses of the study in educational decision-making and planning. Sometimes it is necessary to state a disclaimer in the introduction to the study to minimize misunderstanding and misuse of the study. For example, a study which analyzed the number of adults who completed a district Adult Basic Education program and passed the General Educational Development exam disclaimed the study as an evaluation of either program and cited the possible factors such as the mobility of the adult population, availability of programs, and program objectives.

4. The significance of "findings" and the search for "meaning" -

A single study rarely provides the decision-maker with a specific "answer" to a problem. The study provides a more systematically collected and analyzed data base for the decision. Usually other factors must be

taken into consideration, such as the timing of a decision, additional information or other viewpoints, resources available, etc. Thus, most students delineate short-term and long-term educational implications based on their findings rather than specific recommendations which might limit the usefulness of the study. Students are encouraged to discuss informally the study with the decision-maker.

When the findings confirm general expectations, the formal report systematically synthesizes previous assumptions based on personal experience. However, most studies yield at least one surprising result. For example, a teacher surveyed the staff regarding the "bloc" schedule after a year of implementation. The field testing of the questionnaire on administrators and counselors indicated that there were no strong feelings toward the new schedule. However, the 87 staff responses indicated that as a group they had definite opinions about the educational benefits of the "bloc" schedule. One administrator of a private school discovered that, unlike the Board of Visitors, administrators, and staff, neither parents nor pupils wanted to participate in developing regulations for staff hiring and tenure.

Students report not only their findings for the original research question but begin the search for meaning or interpretation. For example, a student gave a standardized self-concept inventory to pupils in a talented and gifted program to contrast with the mean scores of students in the regular program. The results differed from expectations based on logic and a literature review. The Investigator had recorded all informal comments and reactions of the gifted pupils as she administered the inventory. The additional findings indicated that one explanation may be the validity of the inventory for "gifted" pupils. Additional findings may lead to the next research question in the search for explanations.

5. The next study: the importance of the research process -

Perhaps the most significant student learnings from this conceptualization of an introductory research course is an understanding of the research process. Most students begin to ask many questions in the process of conducting the study and often identify a need for other studies. Students recognize that if they wish to use more sophisticated research procedures, they need additional training. However, it is stressed that many important educational questions do not demand highly technical research procedures.

Once a student has the basic skills and understands a research process, he can then apply this approach to future decision-making and planning. For example, one district established an innovative primary program in a conservative community. A survey of parent reactions and questions about the program was made after two months of implementation. A comprehensive program evaluation utilizing staff survey, interviews of key officials, school records, and participant-observation was done at the end of the first year of implementation. This year a needs assessment regarding a guidance program and additional staff is being conducted. In another district, the study which focused on staff opinions of the "bloc" schedule is being expanded to include opinions of pupils and parents.

Because of the fluxional conditions within an educational institution, it is difficult to conduct long range studies which have internal validity. Students, as full-time educators in teaching, counseling, administration, or supervisory positions, find that a series of short range studies aid in educational planning more than studies with a more controlled design or longitudinal studies.

CONCLUSIONS

Five major findings emerged from this case study. Students learn basic research concepts through conducting a study for educational decision-making. These basic research concepts are validity, reliability, authenticity, credibility, sampling, qualitative and quantitative analysis, research design, stating assumptions, and research limitations. Students understand research concepts when two instructional conditions are present: a) they acquire field experience in their own institutions, and b) they study a relevant topic.

Second, students learn the total research process. They learn the decisions a researcher must make to complete a study. Students rate conducting the study as the most meaningful course requirement on the university faculty evaluation[14] and the instructor-devised course evaluation. Learning the process is more valuable than only reading published studies written in highly technical and formal language. Conducting an empirical study provides further insights whether these skills will be used eventually as critical consumers of research, participants in institutional research, or for later training as social scientists.

Third, decision-making research must be formally taught. Decision-making research should be contrasted to scientific research. The rationale, research process, and standards of adequacy for each model differ even though methodologies may be similar. Institutional research is conducted because of the potential usefulness for school planning and may indirectly add to a body of verified knowledge. Institutional research is conducted within the framework of the staff norms and community educational expectations. The significance of the study lies in its implications for a particular educational institution, not statistical significance or general-

izability to other districts. Educators must be flexible and innovative in conducting research which does not interfere with the existing instructional program. This requires a thorough understanding of the role and nature of the educational institution in the American society and how it differs from a scientific laboratory.

Fourth, educational leaders should become familiar with the field of educational research before taking courses in specific methodologies, research designs, or statistics. Without a broad introduction to the field of educational research, practitioners can become too specialized. Implicit danger exists in training scientists and accepting unconditionally scientific evidence. Educators must be trained to adopt appropriate tools of research for educational planning.

Fifth, introductory educational research textbooks and materials should include both models of research: decision-making and scientific. Most current textbooks and materials present only the scientific model of research or emphasize the reading and interpretation of published research.[15] By becoming acquainted with both research models in an introductory course, educational leaders gain further insights into research processes and multiple uses of research.

FOOTNOTES

1. During the two years which this course has been offered, class size has increased and the number of course sections expanded from one to three. Because of student demand, four sections will be offered next year.

2. C. P. Snow, THE TWO CULTURES: AND A SECOND LOOK (Cambridge, Gt. Br.: Cambridge University Press, 1964), Hans L. Zetherberg, ON THEORY AND VERIFICATION IN SOCIOLOGY (New Jersey: The Bedminster Press, 1967), and Abraham Kaplan, THE CONDUCT OF INQUIRY: METHODOLOGY FOR BEHAVIORAL SCIENCE (Scranton, Pennsylvania: Chandler Co., 1964).

3. I would like to acknowledge the support and suggestions of Dr. William Bost and Dr. Robert Fleming.

4. Gunnar Myrdal, OBJECTIVITY IN SOCIAL RESEARCH (New York: Random House, 1969) and A. H. Maslow, THE PSYCHOLOGY OF SCIENCE: A RECONNAISSANCE (New York: Harper and Row, 1966).

5. George Homans, THE NATURE OF SOCIAL SCIENCE (New York: Harcourt, Brace, and World, 1967).

6. Sally Schumacher, "Planning and Evaluation," ILLINOIS SCHOOL BOARD JOURNAL, XLII, (September-October, 1974).

7. The Investigator-Instructor received her B.A. from Duke University, M.A. in History from Northwestern University, M.Ed. in Guidance from University of North Carolina, and Ph.D. in Educational Policy-making and Program Development from Washington University, St. Louis. She has conducted research for educational decision-making at school, district, regional, state and national levels. She was an Evaluation Associate at a national educational laboratory before teaching research courses at University of Illinois, Urbana-Champaign. She is presently teaching research and evaluation courses at Virginia Commonwealth University.

8. The Investigator-Instructor previously taught a research course which emphasized the scientific model of research to doctoral students at dissertation stage at the University of Illinois, Urbana-Champaign.

9. Donald Campbell and Julian C. Stanley, EXPERIMENTAL AND QUASI-EXPERIMENTAL DESIGNS FOR RESEARCH. (Chicago: Rand McNally, 1963).

10. Ibid., R. Rosenthal, EXPERIMENTER EFFECTS IN BEHAVIORAL RESEARCH (New York: Appleton-Century-Crofts, 1966), and Glenn Bracht and Gene Glass, "The External Validity of Experiments," AMERICAN EDUCATIONAL RESEARCH JOURNAL, V, (November, 1968), pp. 437-474.

11. David Hughes, "An Experimental Investigation of the Effects of Pupil Responding and Teacher Reacting on Pupil Achievement," AMERICAN EDUCATIONAL RESEARCH JOURNAL, X, (Winter, 1973), pp. 21-37.

FOOTNOTES continued

12. Clair, Seltiz, et.al., RESEARCH METHODS IN SOCIAL RELATIONS. (New York: Holt, Rinehart and Winston, 1959).

13. Jacques, Barzun and Henry F. Graff, THE MODERN RESEARCHER (revised edition) (New York: Harcourt, Brace and World, 1970); Severyn T. Bruyn, THE HUMAN PERSPECTIVE IN SOCIOLOGY: THE METHODOLOGY OF PARTICIPANT OBSERVATION (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1966); and Chapter 2 of Sally Schumacher, "Political Processes in Education: A Case Study of an Interagency Curriculum Evaluation and Diffusion Project," (Unpublished Ph.D. dissertation, Washington University, St. Louis, Missouri, 1975).

14. Students rated the course project as relevant to course objectives 3.8 and 3.69 on a scale of 0 to 4. These ratings were above the SEM normed on the School of Education.

15. See Patricia B. Campbell and Deborah Spector, "Teaching Introductory Educational Research: Some Available Materials" CEDR QUARTERLY, IX, (Fall, 1975), 12-17 and CEDR QUARTERLY, VII, (Winter, 1975), 13-20. Perhaps the most explicit conceptualization and demonstration of research for decision-making is found in Robert S. Fleming, "Using Research as an Approach to Curriculum Improvement" in CURRICULUM FOR TODAY'S BOYS AND GIRLS, edited by R. S. Fleming (Columbus, Ohio, Charles E. Merrill Books, Inc., 1963) and Stephen M. Corey, ACTION RESEARCH TO IMPROVE SCHOOL PRACTICES (New York: Bureau of Publications, Teacher's College, Columbia University, 1953). Also see K. B. Start, "Reality for the Researcher", AMERICAN EDUCATIONAL RESEARCH JOURNAL, XII (Summer, 1975), 323-337 and William A. Firestone, "Educational Field Research in a 'Contract Shop'", THE GENERATOR OF DIVISION G, AERA, V, (Spring, 1975), 3-11.